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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/936,653	02/28/2002	Kenneth A. Hodd	10806-176	7309

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EXAMINER

MCCLENDON, SANZA L

ART UNIT	PAPER NUMBER
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1711

DATE MAILED: 04/04/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/936.653

Applicant(s)

HODD ET AL.

Examiner

Sanza L McClendon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133)
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on 28 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 15 is/are allowed.
- 6) ☐ Claim(s) 1-8, 13, 14 and 16 is/are rejected.
- 7) ☐ Claim(s) 9-12 and 17-24 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other \_\_\_\_\_

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DETAILED ACTION

*Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 13-14, and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Chudzik et al (6,156,345 and 6,007,833).

Chudzik et al teaches crosslinkable macromers bearing initiator groups. Said macromer includes two or more polymer pendent polymerizable groups and one or more polymer-pendent initiator groups. Chudzik et al teaches said macromers comprise a polymeric backbone that can be synthetic or naturally occurring. Said backbone is one that is soluble, or nearly soluble, in aqueous solutions, such as water or water with added organic solvents. Said macromeric photoinitiators are, as taught by Chudzik et al, useful as matrices for hydrogels and/or water-containing gels, in addition, to biostable, biodegradable, and/or bioresorbable. Chudzik et al teaches using solutions of said macromers in combination with cellular materials in bulk

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polymerization systems to obtain molded and shaped articles upon curing. Therefore, the examiner contends the macromeric photoinitiators as taught by Chudzik et al can be used to produce a hydrogel membrane matrix, which inherently implies formed from an aqueous system. It is recognized that Chudzik et al teaches hydrophilic backbone for forming hydrogels include poly (vinylpyrrolidone), polyethylene glycol, polyacrylamide and polyvinyl alcohol, however these backbones anticipate the instant formula of claim, wherein either one of n or m are 0 mol%.

Per example 11, Chudzik et al teaches a copolymer of MTA-APMA, APMA, methyl methacrylate, and n-vinylpyrrolidone with addition of acryloyl groups, wherein MTA-APMA is an acrylamide comprising a photoinitiator group and APMA is N-3-aminopropyl methacrylamide. This copolymer appears to anticipate the photocrosslinker of claim 1, wherein MTA-APMA anticipates the moiety C, AMAPA, methyl methacrylate, and n-vinylpyrrolidone anticipate either one of the A and B moieties. The acryloyl groups in the copolymer of claim 1 anticipate the functional groups of claims 13 and 14.

3. Claims 1 and 13-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Hatton et al (4,977,293 and 5,100,987).

Hatton et al teaches monoethylenically unsaturated compounds whose polymers are useful as polymeric photoinitiators of formula (I) which is  $Ar^1COC(R^1)(R^2)R^3$ . Said compounds of formula I can be copolymerized with other ethylenically unsaturated monomers, such as acrylic, methacrylic, vinyl or styrenic monomers. Said copolymers are usually copolymers of formula 1 with (B) a mono-ethylenically unsaturated monomer containing an acidic or basic group and, optionally, (C) at least one mono-ethylenically unsaturated monomer. Said copolymer of (A), (B), (C) may be from polymerized monomer mixtures in which the amount by weight (A), is generally from 1 to 50%, (B) is generally from 1 to 50%, and (C) is generally from 10 to 98%. This teaching appears to anticipate the photocrosslinker of claims 1 and 13-14.

4. Claims 1 and 13-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Chabreck et al (6,204,306 B1).

Chabreck et al teaches functionalized photoinitiators, derivatives and macromers therefrom and their use. Said functionalized photoinitiator is an a-aminoacetophenone functionalized with an organic diisocyanate such as seen in formula (I). Chabreck et al teaches photoinitiators of formula (I) can

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be used for the preparation of polymerizable photoinitiators having ethylenically unsaturated groups by reacting a compound of formula (I) with hydroxyl- or amino- functional ethylenically unsaturated compounds to produce compounds of formula (XVII). This appears to anticipate the formula of claim 1, wherein formula (XVIII) anticipates claims 13 and 14. Said compounds having these formulas are suitable as initiators for radiation induced polymerization of ethylenically unsaturated compounds. In addition to the compounds of formula (XVII), Chabreck et al teaches oligomeric/polymeric photoinitiators comprising partially or completely hydroxyalkylated oligo- or poly-acrylates or -methacrylates, or -acrylamides or -methacrylamides, wherein the primary hydroxyl or amino group is substituted by a radical having formula (IX). And said poly- or oligo- initiator may comprise from 5 to 100 mol% structural units of formula (XII) and from 95 to 0 mol% structural units of formula (XIV). Said oligomers or polymers of this type have an average molecular weight of from 300 to 10,000 Daltons. Said macromeric photoinitiators of this type, as taught by Chabreck, are distinguished by good tolerability and high effectiveness, wherein the photochemical decomposition products are covalently bonded into resulting polymers, for example as chain initiators or chain terminators. This appears to anticipate claims 1 and 13-14 because the examiner deems that there is some vinyl, i.e., acrylic or methacrylic, functionality for said macromeric photoinitiators described above to be covalently bonded to the resulting polymer products.

5. Claims 1 and 13-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Chabreck et al (WO 96/20919).

US 6,204,306 B1 is being used as the English language equivalent for WO 96/20919.

Chabreck et al teaches functionalized photoinitiators, derivatives and macromers therefrom and their use. Said functionalized photoinitiator is an a-aminoacetophenone functionalized with an organic diisocyanate such as seen in formula (I). Chabreck et al teaches photoinitiators of formula (I) can be used for the preparation of polymerizable photoinitiators having ethylenically unsaturated groups by reacting a compound of formula (I) with hydroxyl- or amino- functional ethylenically unsaturated compounds to produce compounds of formula (XVII). This appears to anticipate the formula of claim 1, wherein formula (XVIII) anticipates claims 13 and 14. Said compounds

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having these formulas are suitable as initiators for radiation induced polymerization of ethylenically unsaturated compounds. In addition to the compounds of formula (XVII), Chabreck et al teaches oligomeric/polymeric photoinitiators comprising partially or completely hydroxyalkylated oligo- or poly-acrylates or -methacrylates, or -acrylamides or -methacrylamides, wherein the primary hydroxyl or amino group is substituted by a radical having formula (IX). And said poly- or oligo- initiator may comprise from 5 to 100 mol% structural units of formula (XII) and from 95 to 0 mol% structural units of formula (XIV). Said oligomers or polymers of this type have an average molecular weight of from 300 to 10,000 Daltons. Said macromeric photoinitiators of this type, as taught by Chabreck, are distinguished by good tolerability and high effectiveness, wherein the photochemical decomposition products are covalently bonded into resulting polymers, for example as chain initiators or chain terminators. This appears to anticipate claims 1 and 13-14 because the examiner deems that there is some vinyl, i.e., acrylic or methacrylic, functionality for said macromeric photoinitiators described above to be covalently bonded to the resulting polymer products.

6. Claims 1-8 and 13-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Angiolini et al (J. Applied Science, 51 (1994) pp. 133-143).

Angiolini et al teaches polymeric photoinitiators bearing side-chain benzoyldiphenyl phosphinoxide moieties for UV curable coatings. Said polymeric photoinitiators are prepared by reacting poly (4-vinylbenzoic acid) or 4-vinylbenzoic acid/methyl methacrylate copolymers with thionyl chloride followed by methoxydiphenylphosphine. Said polymeric photoinitiators are then checked for reactivity in clear-coating formulations comprising acrylic monomers and subsequently compared with the reactivity of a low molecular weight phosphine oxide.

*Claim Rejections - 35 USC § 103*

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this

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title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chudzik et al (6,156,345 and 6,007,833).

Chudzik et al teaches crosslinkable macromers bearing initiator groups. Said macromer includes two or more polymer pendent polymerizable groups and one or more polymer-pendent initiator groups. Chudzik et al teaches said macromers comprise a polymeric backbone that can be synthetic or naturally occurring. Said backbone is one that is soluble, or nearly soluble, in aqueous solutions, such as water or water with added organic solvents. Such macromeric photoinitiators are, as taught by Chudzik et al, useful as matrices for hydrogels and/or water-containing gels, in addition, to biostable, biodegradable, and/or bioresorbable. Chudzik et al teaches using solutions of said macromers in combination with cellular materials in bulk polymerization systems to obtain molded and shaped articles upon curing. Therefore, the examiner contends the macromeric photoinitiators as taught by Chudzik et al can be used to produce a hydrogel membrane matrix, which implies formed from an aqueous system. Therefore, the invention of claim 16 is read in the reference.

*Allowable Subject Matter*

9. Claims 9-12 and 17-24 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter: The prior art fail to teach a photocrosslinkable wherein the ethylene units (A, B, and C) are substituted as defined in claims 9-12. Nor does the prior art teach a method of forming a macromolecular crosslinked network from an aqueous composition comprising the photocrosslinker of claim

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1. a copolymerizable vinylic, acrylic, or methacrylic monomer, and a hydrophilic polymer comprising vinylic, acrylic, or methacrylic functional groups, wherein said polymer forms discrete crosslinkable units in the form of water-soluble particles. The prior art fails to teach a ophthalmic lens produced and/or ophthalmically acceptable compositions from a composition comprising the photocrosslinker of claim 1, nor does said art teach said compositions with the properties of claim 22 nor methods of injecting said composition into capsular bags of the eye and irradiating.

11. Claim 15 is allowed.

12. The following is an examiner's statement of reasons for allowance: the prior art fails to teach a method for producing a photocrosslinker from the hydrophilic macromolecule of claim 15 by the method as disclosed in claim 15. Said method is distinguished over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

#### *Conclusion*

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent 6,087,412 to Chabreck et al discloses polymeric photoinitiators and compositions comprising said initiators.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sanza L McClendon whose telephone number is (703) 305-0505. The examiner can normally be reached on Monday through Friday 8:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Seidleck can be reached on (703) 308-2462. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0657.

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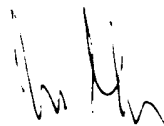
Sanza L McClendon

Examiner

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SMc

April 1, 2003



James J. Serdieck  
Supervisory Patent Examiner  
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